



UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

DIVISION OF
CORPORATION FINANCE

March 23, 2011

John M. Maraganore, Ph.D.
Chief Executive Officer
Alnylam Pharmaceuticals, Inc.
300 Third Street
Cambridge, MA 02142

Re: Alnylam Pharmaceuticals, Inc.
Form 10-K
Filed February 26, 2010
File No. 000-50743

Dear Mr. Maraganore:

We have completed our review of your filing and do not have any further comments at this time.

Sincerely,

Jeffrey Riedler
Assistant Director